3D-printed green car to blaze a trail

By AUDREY TAN

THE future of green car technology could lie in 3D printing.

Two eco-friendly cars, one of which is the first in Singapore to be made using 3D-printed parts, were unveiled yesterday by Nanyang Technological University.

The 3D-printed prototype, called the NTU Venture 8, has a cabin made of printed components glued together using epoxy adhesive. A total of 150 panels were used in its construction – the largest assembly of 3D-printed parts to be put together here.

Each of the 3D-printed components is made from acrylonitrile butadiene styrene, a lightweight plastic. Coupled with the aerodynamic design of the vehicle, it reduces drag, which makes the 120kg car more energy-efficient.

While the plastic shell is only 1mm thick, it is strong enough to handle the weight of the vehicle and the driver, because of the honeycomb structure used by the student designers from NTU's College of Engineering.

The structure's properties provide the strength and stiffness required, said student Ng Jun Wen, 24, part of a team of 16 that built the cars.

Said Associate Professor Ng Heong Wah, who mentored the students: "We are extremely proud to have designed and assembled a 3D-printed body shell for the electric car, which is Singapore's first and probably Asia's first. The 3D-printed car body was pushing existing technology to the limits."

The NTU Venture 8 (above) and NTU Venture 9 (left), two eco-cars designed and built by students from NTU's College of Engineering. The cars will be competing in the latest edition of the Shell Eco-marathon Asia in Manila at month's end. ST PHOTOS: ONG WEE JIN

Currently, 3D-printing technology is used for smaller items such as architectural models.

The second car is a three-wheeled vehicle that, with a sleek shape resembling a bullet, has a unique tilting ability.

Team member Winston Tan, 27, said: "We took our inspiration for the tilting mechanism from motorcycle racing, where racers lean left or right during sharp turns to maintain their handling and speed."

Both cars are powered partially by solar cells mounted atop their frames, and will race at month's end in the Shell Eco-marathon Asia in Manila, an annual competition that challenges student teams from around the world to design, build and test energy-efficient vehicles. Another Singapore team, from ITE College West, will also be taking part.

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